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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,350	07/21/2003	Sascha Kreiskott	S-99,952	9406
35068	7590	07/12/2005	EXAMINER	
UNIVERSITY OF CALIFORNIA LOS ALAMOS NATIONAL LABORATORY P.O. BOX 1663, MS A187 LOS ALAMOS, NM 87545			ALEXANDER, MICHAEL P	
			ART UNIT	PAPER NUMBER
			1742	

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/624,350	<b>Applicant(s)</b> KREISKOTT ET AL.	
	<b>Examiner</b> Michael P. Alexander	<b>Art Unit</b> 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 May 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 14-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-13, drawn to an electropolishing process, classified in class 205, subclass 640.
- II. Claims 14-19, drawn to a template article, classified in class 428, subclass 615.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the article as claimed can be made in a batch process.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Bruce Cottrell on 17 June 2005 a provisional election was made with traverse to prosecute the invention of I, claims 1-13. Affirmation of this election must be made by applicant in replying to this Office action. Claims 14-19 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

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Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Objections***

Claim 2 is objected to because of the following informalities: "ia" in lines 2 should be --is--. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qiao (provisional application 60/483956 of U.S. Pat. Pub. 2005/0000826 A1) in view of Datta et al. (U.S. Pat. 6,228,246 B1) and Rosswag (U.S. Pat. 4,372,831).

With respect to filing dates of Qiao, the non-provisional application was filed on 28 June 2004 and the provisional application was filed on 1 July 2003. All references to Qiao refer to the disclosure in the provisional application.

Regarding claim 1, Qiao discloses (Fig. 1A, page 1 paragraphs 2-3) a continuous process of providing a highly smooth surface to a metallic tape, the process comprising: passing a metallic tape having an initial roughness through a bath contained within a polishing section of an electropolishing unit over an inherently pre-selected period of time; and passing a current through the metallic tape during the period of time the metallic tape is in the bath whereby the roughness of the metallic tape is reduce. Qiao does not specify that the bath would contain acid and does not specify the current density applied.

With respect to the limitation of the bath containing an acid in claim 1, Datta et al. teach (col. 3 lines 49-65) that electropolishing baths contain acid in order to dissolve and transport the ionic species formed by the electric current. It would have been obvious to one of ordinary skill in the art to combine acid with the electropolishing bath of Qiao in order to dissolve and transport the ionic species formed by electric current as taught by Datta et al.

With respect to the limitation of mean surface current density of at least 0.18 amperes per square centimeter in claim 1, Rosswag teaches (col. 3 lines 26-30) that industrial gloss would be obtained at lower current densities and that mirror gloss would be obtained at higher current densities. Since current density is a result-effective variable as taught by Rosswag, it would have been obvious to one of ordinary skill in the

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art at the time of the claimed invention to electropolish at the desired current density by a routine optimization in order to obtain the desired finish. See MPEP 2144.05 II.

Regarding claim 2, Qiao does not specify that the initial RMS roughness would be more than about 10 nm and that the reduced RMS roughness would be less than about 4 nm. The Examiner asserts that prior to polishing the initial RMS roughness of the tape would be more than 10 nm since the tape would not yet have been polished. Also, Rosswag teaches (col. 3 lines 26-30) that industrial gloss would be obtained at lower current densities and that mirror gloss would be obtained at higher current densities. It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to combine higher current densities with the electropolishing process of Qiao in order to obtain a mirror gloss finish as taught by Rosswag. See MPEP 2144.05 II. Furthermore, the Examiner asserts that a mirror gloss finish would inherently have a reduced RMS roughness of less than about 4 nm.

Regarding claim 3, Qiao does not specify the current density applied and does not specify a reduced RMS roughness of less than about 0.5 nm. Rosswag teaches (col. 3 lines 26-30) that industrial gloss would be obtained at lower current densities and that mirror gloss would be obtained at higher current densities. Since current density is a result-effective variable as taught by Rosswag, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to electropolish at the desired higher current densities by a routine optimization in order to obtain the desired mirror finish. See MPEP 2144.05 II. Furthermore, the Examiner asserts that a mirror gloss finish would inherently have a reduced RMS roughness of less than about 0.5 nm.

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Regarding claim 4, Qiao does not specify a reduced RMS roughness of less than about 0.5 nm. However, Rosswag teaches (col. 3 lines 26-30) that industrial gloss would be obtained at lower current densities and that mirror gloss would be obtained at higher current densities. Since current density is a result-effective variable as taught by Rosswag, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to electropolish at the desired higher current densities by a routine optimization in order to obtain the desired mirror finish. See MPEP 2144.05 II. Furthermore, the Examiner asserts that a mirror gloss finish would inherently have a reduced RMS roughness of less than about 0.5 nm.

Regarding claims 5-6, Qiao does not specify that the bath can contain a mixture of sulfuric and phosphoric acid. However, Rosswag discloses (col. 1 lines 30-39) the addition of a mixture of sulfuric and phosphoric acid to the bath in order to electropolish metallic workpieces. It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to combine a mixture of sulfuric and phosphoric acid with the bath of Qiao in order to electropolish the metallic tape as taught by Rosswag.

Regarding claim 7, Qiao do not disclose that the metallic tape would be a single crystal, therefore the tape would be polycrystalline.

Regarding claim 8, Qiao disclose (page 4 paragraph 2) that the metal can be a nickel alloy.

Regarding claim 13, Qiao disclose (Fig. 1A and page 3 paragraph 3) that the metallic tape is passed through the bath and the bath provides electrical contact with the metallic tape.

Claims 1, 5, 7 and 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andreshak et al. (U.S. 5,066,370).

Regarding claim 1, Andreshak et al. disclose (Fig.1, col. 1 lines 8-15, col. 9 lines 1-21) a process of providing a microfinished surface to a metallic strip, the process comprising: passing a metallic strip having an initial roughness through an acid bath contained within a polishing section of an electropolishing unit over an inherently pre-selected period of time; and passing a mean surface current density of between 0.5 and 2 amperes per square centimeter through the metallic tape during the period of time the metallic tape is in the acid bath whereby the roughness of the metallic tape is reduced. Andreshak et al. do not specify that the process can be made continuous and do not use the word "tape" to describe the strip.

With respect to the limitation that the process can be made continuous in claim 1, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to modify the batch process of Andreshak et al. by making it a continuous process in order to speed up the process. See *In re Dilnot* (MPEP 2144.04 E) holding that the claimed continuous operation would have been obvious in light of the batch process of the prior art.

With respect to the limitation of "tape" in claim 1, the Merriam-Webster Online Dictionary defines tape as "a narrow flexible strip or band". Andreshak et al. disclose (col. 1 lines 6-15) that the metallic workpiece would be a strip or band and in Fig. 1 disclose that the strip or band would be flexible.



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Regarding claim 5, Andreshak et al. disclose (col. 9 lines 1-21) that the acid bath would include a mixture of sulfuric and phosphoric acid.

Regarding claim 7, Andreshak et al. do not disclose that the metallic strips would be single crystals therefore the metallic strips would be polycrystalline metal.

Regarding claim 9, Andreshak et al. disclose (see Fig. 1, col. 5 lines 43-66, col. 9 lines 1-21) that the metallic strip would be in direct electrical contact with an anode (24) in said electropolishing unit while said metallic strip would be within an electrically conductive liquid throughout said electropolishing unit and within said acid bath in said polishing section, said acid bath further in contact with a cathode in said electropolishing unit so as to complete an electrical circuit.

Regarding claim 10, Andreshak et al. do not specify the composition of the electrical connection (24) to the metallic strip. The Examiner takes official notice that silver has a high conductivity. It would have been obvious to one of ordinary skill in the art to modify the electrical connection (24) to the metallic strip of Andreshak et al. by making the electrical connection out of silver in order to have high conductivity.

Regarding claim 11, Andreshak et al. disclose (col. 9 lines 1-21) that the acid bath would include a mixture of sulfuric and phosphoric acid.

Regarding claim 12, Andreshak et al. disclose (see Fig. 1, col. 5 lines 43-66, col. 9 lines 1-21) that the metallic strip would be in direct electrical contact with an anode (24) in said electropolishing unit while said metallic strip would be in contact with mechanical contacts (14, 16, 18 and 20) as the metallic strip is passed through the acid bath so as to complete an electrical circuit.

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Regarding claim 13, Andreshak et al. disclose (abstract and Fig. 1) that the metallic tape is polished in the acid bath, therefore the acid bath would provide electrical contact with the metallic tape.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Alexander whose telephone number is 571-272-8558. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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